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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,151	03/29/2001	Joseph R. Summa	81017PCW	4261

7590 09/28/2004

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EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/821,151	SUMMA, JOSEPH R.	
	Examiner	Art Unit	
	LUONG T NGUYEN	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/29/2001</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

1. Claims 3-5 are objected to because of the following informalities:

Claim 3 (line 1), claim 4 (line 1), claim 5 (line 1), "the colored filter includes" should be changed to --the colored filters include--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Foster (US 6,643,386).

Regarding claim 1, Foster discloses an image sensor (image sensor 50, figure 6, column 6, lines 1-2) comprising an array of pixels for collecting incident light and converting the light into an electrical charge (pixels, figure 6, column 6, lines 9-10); a color filter array having a plurality of colored filters positioned adjacent to the pixels for selectively transmitting specific spectral bands of light to the pixels (color filters 30, figure 6, column 6, lines 13-16, column 3, lines 48-62); a plurality of lenses (microlenses 38, 52, 54, figure 6) positioned adjacent to individual pixels wherein the lenses (microlenses 52, figure 6) positioned adjacent a first color of

the colored filters are substantially larger in size than lenses (microlenses 38, figure 6) adjacent a second color, such that a greater portion of the incident light is focused onto the pixel adjacent the first color of the colored filter (figure 6, column 6, lines 1-17).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster (US 6,643,386) in view of Omori et al. (JP 2000-260968).

Regarding claim 2, Foster fails to specifically disclose the color filters include a blue colored filter which is the first color in the color filter array. However, Foster discloses microlenses 52, which are positioned adjacent to a first color, are larger in size than microlenses 38 (figure 6, column 6, lines 1-17). And Omori et al. teaches that the sizes of the microlenses for low-sensitivity colors (for example, blue and red) larger than that of microlenses for a high-sensitivity color (for example, green), see Solution, and noted that blue is the lowest-sensitivity color among red and green colors. Therefore, the size of microlenses formed on the blue color filters are largest as compared to the size of microlenses formed on the red color filters and green color filters. Therefore, the microlenses 52 of Foster are formed on the blue colored filter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention

was made to modify the device in Foster by the teaching of Omori et al. in order to reduce noise in the low-sensitivity colors (see Solution).

Regarding claim 3, Foster discloses the colored filters include red and green colored filters either of which is the second color (figure 6).

Regarding claim 4, Foster fails to specifically disclose the color filters include a red colored filter which is the second color. However, Foster discloses microlenses 52, which are positioned adjacent to a first color, are larger in size than microlenses 38 (figure 6, column 6, lines 1-17). And Omori et al. teaches that the sizes of the microlenses for low-sensitivity colors (for example, blue and red) larger than that of microlenses for a high-sensitivity color (for example, green), see Solution, and noted that blue is the lowest-sensitivity color among red and green colors. Therefore, the size of microlenses formed on the blue color filters (first color) are largest as compared to the size of microlenses formed on the red color filters (second color) and green color filters (third color). Therefore, the microlenses 38 of Foster are formed on the red colored filter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Foster by the teaching of Omori et al. in order to reduce noise in the low-sensitivity colors (see Solution).

Regarding claim 5, Foster discloses the colored filters include a green colored filter which is a third color and green colored filter is substantially smaller than the red colored filter

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(the size of microlenses 54 are smallest as compared to the size of microlenses 38 and 52, figure 6, therefore the third color is green).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yu (US 6,008,843) discloses color charge-coupled device.

Suzuki et al. (US 6,690,049) discloses solid-state image sensor, production method of the same, and digital camera.

Sayama (US 2001/0045987) discloses solid state imaging device with pigment based and dye based color filters.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T NGUYEN whose telephone number is (703) 308-9297. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN LN
09/19/04



NGOC-YEN VU
PRIMARY EXAMINER